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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,716	10/21/2003	Michael Francis Higgins	08831.0060	9772

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CLAIRVOYANTE, INC.
874 GRAVENSTEIN HIGHWAY SOUTH, SUITE 14
SEBASTOPOL, CA 95472

EXAMINER	
LUU, MATTHEW	
ART UNIT	**PAPER NUMBER**
2676	

DATE MAILED: 06/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/690,716	HIGGINS, MICHAEL FRANCIS	
	Examiner	Art Unit	
	LUU MATTHEW	2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

Claims 5, 6 and 14 are objected to because of the following informalities:

Regarding claim 5, "deteremined by traversing the edges of a plurality of gamuts" should be "determined by traversing the edges of a plurality of gamuts".

Regarding claim 6, "gamutsand" should be "gamuts and".

Regarding claim 14, "andmulti-primary gamuts" should be "and multi-primary gamuts".

Appropriate correction is required.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "means for generating gamut conversion values, said values calculated by traversing the edges of a plurality of gamuts that said unit is to apply conversion" as recited in claims 5, 13 and "traversing around the edge of a gamut to generate saturation values" as recited in claims 7 and 15, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, line 7 recites, "calculate hue angles for said source image data based on received components". It is not clear whether these "components" refer to the chroma components for the luma components as set forth in line 5.

Claim 1, line 8, it is not clear what exactly is "a gamut conversion unit to derive gamut conversion values". Does the Applicant mean "a gamut conversion for deriving gamut conversion value" or "a gamut conversion unit derives gamut conversions values"?

See also claim 1, line 2, "input channel means to receive"; line 3 "a gamma unit to convert"; line 4 "a chroma/luma unit to convert", and line 6 "a hue angle calculator to receive".

Claim 1, line 8, "gamut conversion values to apply to the components of said source image ". It is not clear whether these "components" refer to the chroma components for the luma components as set forth in line 5.

Regarding claim 17, line 4, it is not clear what exactly is the claimed "and converts the color is converted back to chroma/luma".

Dependent claims are also rejected for incorporating the defects from their respective parent claim 1 by dependency.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 4 and 13-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 4, it is not clear what exactly is the "values that are computed off-line".

Claim 13 recites, solely, a "single means" as its function(s) and as being of undue breadth. In other words, a single means claim, which covered every conceivable means for achieving the stated purpose was held nonenabling for the scope of the claim because the specification disclosed at most only those means known to the inventor. Furthermore, the specification fails to provide a clear description of the claimed limitation "said values calculated by traversing the edges of a plurality of gamuts that said unit is to apply conversion".

Regarding claim 15, it is not clear what is "traversing around the edge of a gamut to generate saturation values".

Dependent claims are also rejected for incorporating the defects from their respective parent claim 13 by dependency.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 13 are (as best understood) rejected under 35 U.S.C. 102(b) as being anticipate by Narahara (6,023,527).

Regarding claim 13, Narahara (as best understood) discloses (Figs. 3, 5 and 8) a gamut conversion unit comprising:

means (5, 6 and 7) for generating gamut conversion values, which are calculated by traversing the edges of a plurality of gamuts. Fig. 8 shows the color gamut compression or gamut conversion method, wherein the color gamuts of CRT traverse from the outer edges of the CRT into the inner edges of the inkjet.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Narahara in view of Qiao (US 2003/0117457).

Regarding claim 14, Narahara discloses (Figs. 1 and 8) the monitor gamuts (CRT) and the multi-primary gamuts (printer and monitor gamuts).

Narahara fails to disclose the standard gamuts.

However, Qiao teaches that different types of gamuts from different devices, such as a printer, monitor, scanner, or digital camera, may have its own unique color gamut (Section 4). Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of a group comprises a standard gamuts, monitor gamuts and multi-primary gamuts into the gamut conversion unit of Narahara since this is conventional in the art.

Regarding claim 15, Narahara discloses (Fig. 8) the conversion values are calculated by traversing around the edge the inkjet gamut.

Narahara fails to explicitly teach the generation of saturation values.

However, Narahara further teaches "the luminance of the color display is substantially maintained during the mapping process while the purity or chroma of the color display unit is adjusted to map onto the gamut of the inkjet printer". It is well known in the art that, based upon human perception, another set of terms in colorimetric includes dominant wavelength, excitation purity and luminance which roughly

correspond to hue, saturation and lightness/brightness, respectively. Therefore, the "excitation purity" can be considered as the claimed color saturation.

Claim Rejections - 35 USC § 103

Claims 1-8, 10-12, 16, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Narahara as applied to claim 13 above, and further in view of Qiao (US 2003/0117457) and Matsuzaki et al (5,987,165).

Regarding claim 16, Qiao discloses (fig. 6 and 7) generate one color in a perceptually uniform chroma/luma space for each hue angle. See section 41, the last four lines, and sections 42 and 43.

On the other hand, Matsuzaki also discloses (Figs. 1 and 10) a hue calculation (307) in a perceptually uniform chroma/luma space (303).

It would have been obvious to the person of ordinary skill in the art at to use the hue angle calculation techniques of Qiao and Matsuzaki in the color gamut conversion unit of Narahara to adjust the hue angle when converting from one color space to another color space.

Regarding claim 18, Matsuzaki further discloses (Figs 1-10) wherein the values are generated along the edges of the gamut (Fig. 10) and , for a set of points along the edge, chroma/luma and hue angle data is generated (Fig. 1, luma (305), saturation (306) and hue (307) are calculated).

Regarding claim 19, Qiao discloses (fig. 6 and 7) generate one color in a perceptually uniform chroma/luma space for each hue angle. See section 41, the last four lines, and sections 42 and 43.

Regarding claim 20, Narahara fails to teach using the saturation ratios to convert one color gamut space to another color gamut space. However, the idea of using the saturation ratios in color gamut space conversion is conventional in the art.

Regarding claim 1, as best understood, Narahara (6,023,527) discloses (Figs. 3, 5 and 8) a gamut conversion system comprising:

Input channel means (external interface I) (3) for receiving source image data (RGB);

A gamma unit (5) for converting the source image data (RGB) into perceptually uniform space data (LAB);

A chroma/luma unit (6) for converting the perceptually uniform space data (LAB) into a format comprising chroma and luma components (LCH); and

A gamut conversion unit (reproduction color space mapping unit 7) for deriving gamut conversion values.

Narahara fails to disclose a hue angle calculator for receiving at least the chroma components from the chroma/luma unit to calculate hue angles.

However, Qiao discloses (fig. 6 and 7) generate one color in a perceptually uniform chroma/luma space for each hue angle. See section 41, the last four lines, and sections 42 and 43.

On the other hand, Matsuzaki also discloses (Figs. 1 and 10) a hue calculation (307) in a perceptually uniform chroma/luma space (303).

It would have been obvious to the person of ordinary skill in the art at to use the hue angle calculation techniques of Qiao and Matsuzaki in the color gamut conversion unit of Narahara to adjust the hue angle when converting from one color space to another color space.

Qiao further teaches the conversion values can be stored in a look-up table (Section 42).

Regarding claim 2, it is obvious that the chroma/luma conversion unit may not needed since the input image data is already in the chroma/luma format.

Regarding claim 3, the hue angles in some power of two is conventional in the art.

Regarding claim 4, Narahara discloses (Fig. 10) the color values are computed. off-line.

Regarding claim 5, Narahara (as best understood) discloses (Figs. 3, 5 and 8) a gamut conversion unit comprising:

means (5, 6 and 7) for generating gamut conversion values, which are calculated by traversing the edges of a plurality of gamuts. Fig. 8 shows the color gamut compression or gamut conversion method, wherein the color gamuts of CRT traverse from the outer edges of the CRT into the inner edges of the inkjet.

Regarding claims 6, 7, 8 and 10-12, please note the rejections as set forth above with regards to claims 14, 15, 16 and 18-20, respectively.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

-Suzuki et al (6,360,008) a method for converting color data using the gamut diagrams.

-Ito et al (5,933,253) discloses color area compression method.

-Wan et al (5,731,818) a method for constrained gamut clipping.

-Ogatsu et al (5,724,442) disclose an apparatus for processing input color image data to generate output color image data within an output color reproduction range.

-Ruets (5,438,649) discloses a method for color printing according to a printer table in which the hue angle of the colors in the printer table are warped so as to compensate for the Abney effect.

-Beretta (5,416,890) a graphical user interface for controlling color gamut clipping.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUU MATTHEW whose telephone number is (571) 272-7663. The examiner can normally be reached on Flexible Schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, BELLA MATTHEW can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M. Luu

MATTHEW LUU
PRIMARY EXAMINER